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THE term "rheumatoid arthritis" is objectionable, as suggesting a causal connection with rheumatism. If, however, it is employed and understood as merely meaning an arthritis somewhat resembling some forms of rheumatism, the term may be retained, although the name "arthritis deformans" is less open to objection. I propose, however, in this paper to retain the term "rheumatoid arthritis," owing to its long usage, as I am afraid that the description of that disease under another and less recognised name may lead to confusion.

Rheumatoid arthritis is held by some to be a very complex disorder which has many factors concerned in its etiology. I do not hold with this view, as I consider that many forms of arthritis, especially the various forms of septic arthritis, have been classified as rheumatoid arthritis. These have no right to that name at all, and should not be confused with that disease.

Rheumatoid arthritis is a constitutional disease, not a local one—the affection of the joints is only a part, although an important part, of the morbid process. It is a disease due to the presence of micro-organisms which gain access to the blood, in the majority of cases probably through some chronic catarrh of the alimentary tract, although the invasion may occur from the nose, pharynx, or air tubes. After gaining access to the circulation, they find a suitable nidus for their growth in the joints, where they grow and propagate in the synovial membranes, ligaments, cartilages, and bones. As a result of their presence, inflammatory changes occur which result in ulceration, erosion, destruction, and, coincidently as a rule, in hypertrophy also. During the active growth of these micro-organisms, toxins are produced and discharged into the circulation, and, by their action on the nervous system, give rise to the nervous symptoms of the disease, while the toxins acting on the vaso-motor nerves and the trophic nerves of the skin, produce the local sweatings

and pigmentation which occur in connection with rheumatoid arthritis.

The disease occurs in acute, subacute, and chronic forms, of which the chronic variety is by far the commonest. Acute rheumatoid arthritis occurs principally among children and young adults. It is rare in middle life and old age, and is met with mainly in females. The acute and subacute forms are characterised by inflammatory changes in the affected joints, by erosion of cartilages and bones, by nerve and trophic phenomena, and by glandular enlargements. The disease usually commences in one joint, commonly one of the metacarpophalangeal articulations, and then rapidly spreads to other joints. The symmetrical nature of the affection is usually well marked, and the joints are painful, hot, and present a spindle-shaped enlargement, but no outgrowth or thickening of either cartilage or bone occurs during the acute stage.

The chronic form may be a later stage of the acute disease, or, as is more frequently the case, it is chronic from the first, and occurs especially in middle life and in females. In the latter, it is specially prone to start about the climacteric period. It is characterised by progressive thickening and hardening of all the joint structures, by the formation of osteophytic growths, by the lipping of cartilages, and by the development of deformities. Comparatively small injuries of a joint, especially of a small joint, may lead to rheumatoid arthritis, and to an extension of the process to other joints in a symmetrical order. The injuries are frequently the outcome of excessive work and strain, especially in elderly and enfeebled persons with a diminished power of resistance, increasing with years and with imperfect nutrition.

The affection commences with slight swelling and pain on movement. The amount of effusion into the joint is variable, and may be marked or slight. The hands and feet, especially the hands, are most liable to be first affected, and the disease then tends to advance more or less up the limbs towards the trunk, obeying, as Charcot described, "the centripetal law." In extreme cases, every joint in the body may be affected. The temporo-maxillary articulation becomes the seat of rheumatoid arthritis in about 25 per cent. of the total number of cases. At a later period the articulations of the spine may

become involved. The disease usually attacks the cervical vertebræ first, causing pain at the back of the neck, and rendering rotation of the head difficult. The dorsal and lumbar vertebræ may be next affected, so that in bad cases the spine may be converted into a rigid column. Pain may be very severe, especially at night, while, on the other hand, the case may proceed to extreme deformity without pain.

Very considerable alterations in the shape of the joints may occur from the formation of osteophytes, thickening of the capsules, and retraction of muscles. The cartilages become worn away at the centres, and the ends of the bones become eburnated by attrition and chronic osteitis. In such joints grating is readily obtained by rubbing the eburnated ends of the bones against each other. The locking of the joints, which sometimes ultimately occurs, is not due to true ankylosis, but to the presence of the projecting osteophytes, and to the thickening of the capsules of the joints. True ankylosis only occurs in the spinal column in cases of rheumatoid arthritis. Atrophy of the muscles is usually present, with contractures tending to flex the thigh, or to bend the knee, elbow, wrist, &c. There is usually some increase of myotatic irritability, as shown by some exaggeration, frequently but slight, of the knee jerks. Most persons finally reach a stage in which the disease becomes arrested, so that they are free from pain, and only are troubled with the associated crippling and consequent inconvenience.

CASES WITH HEBERDEN'S NODES.

These cases represent the mildest degree of the disease. The nodes consist of little hard swellings of the finger joints, affecting almost entirely the terminal phalangeal, and are due to a very chronic form of rheumatoid arthritis. This type is more commonly met with in women than in men, and usually at or after the middle period of life. The nodules are due to enlargement of the ends of the bones, which are frequently covered by a pouch of the projecting synovial membrane, which acts somewhat as a bursa. The joints become swollen and tender. The cartilages are softened, and the ends of the bones are eburnated. The enlargements are osseous in character, but there may be a certain amount of increase of

the periarticular fibrous tissues. After a time the disease usually becomes arrested, but the swellings remain, and eventually may cause no discomfort. Treatment cannot produce any diminution in size of the bony growths, but may effect a decrease in size of the periarticular tissues referred to.

Heberden's nodes are frequently associated with some uterine disturbance. Heberden, in his original paper, particularly noted the fact that the thirty-three cases he described occurred only in women, and in women of middle age. This form of rheumatoid arthritis touches a point of age beyond which the influence of the sexual system is likely to be much diminished, and there is undoubtedly a direct connection between it and uterine troubles associated with the climacteric. The affection is not commonly very progressive, and never reaches to much deformity ; but, on the other hand, there is no retrocession of the chronic arthritis. The uterine troubles and the active affection of the joints subside together.

PREDISPOSING CAUSES.

In the great majority of cases rheumatoid arthritis is a primary disease, but at the same time it is probable that in a small number of cases an antecedent attack of rheumatic fever, or of some form of septic arthritis, such as gonorrhœal arthritis, or even an acute attack of gout, may have left the joints in such a vulnerable condition, that they may subsequently become the seat of true rheumatoid arthritis. Any debilitating condition may predispose to this disease, and, especially of late years, I have seen many cases of rheumatoid arthritis which have followed repeated attacks of influenza. In connection with cases of rheumatoid arthritis it is not uncommon to get a history of a preceding attack of so-called "rheumatic fever," the attack being generally described as one of long duration, and as very resistant to treatment. It may be taken as almost for certain that this attack was one of acute rheumatoid arthritis, which is a disease that does not yield to salicylates as acute rheumatism does.

TREATMENT.

Rheumatoid arthritis, if left untreated, tends to spread from joint to joint, and produces progressive destruction of the joint

tissues. Occasionally treatment fails to affect any arrest of the disease, and this is especially apt to occur in connection with the rheumatoid arthritis of the old. For the successful treatment of this disease, it is essential that the treatment should be commenced while the disease is in its early stages; hence the importance of an early recognition of the malady, and of its distinction from gout and rheumatism. The treatment must be persevered in for a lengthened period of time, generally a year or two, and during the treatment everything possible must be done to increase the patient's strength, and maintain the general condition of nutrition at the highest possible level.

If rheumatoid arthritis is seen and recognised early in the acute stage it is curable. In the later chronic stages, it is possible to arrest the disease, to remove the pain, and to secure greater movement of the joints, but it is not possible to bring the disorganised and deformed joints back to their normal state. It is remarkable, however, even in many chronic cases what a considerable amount of improvement may be effected in the joints if the method of treatment presently to be described is persevered with for a prolonged period of time.

GENERAL AND DIETETIC TREATMENT.

The not infrequent mistake of diagnosing rheumatoid arthritis as gout, and the consequent placing of the patient on a restricted and spare diet, has undoubtedly led to the development of severe and incurable forms of the disease. It is essentially a disease that requires good and nutritious feeding, and I have seen many cases of rheumatoid arthritis which had gone thoroughly to the bad, through the initial error of mistaking the disease for gout, and treating it with a spare diet. The diet should be as liberal and as good as the patient can digest, and animal food should be partaken of freely, though not to the exclusion of vegetables. The exclusion of the red meats, and of such articles as sugar, potatoes, cauliflower, peas and beans, on the assumption that they do harm in rheumatoid arthritis, is, in my opinion, not only unnecessary but is absolutely opposed to the treatment I have adopted and the careful observations I have made, in the dieting of patients suffering from this disease.

A moderate quantity of wine or stout should be taken with

lunch and dinner. Any kind of wine that agrees with the patient may be taken ; but perhaps a generous red wine, such as Burgundy, is the most suitable. Woollen clothing should always be worn next the skin ; and exercise, short of producing pain, should be indulged in. A dry, gravel soil, and a warm, dry climate, are most suitable to patients suffering from this disease.

DRUG TREATMENT.

The treatment of rheumatoid arthritis by drugs must be quite different from that of gout or rheumatism, and efficient measures must be taken to improve the general condition and health of the patient. The drugs that I have found most useful in the treatment of rheumatoid arthritis are guaiacol and potassium iodide. I have now employed guaiacol in some hundreds of cases, extending over several years, and as the result of my experience, I do not hesitate to say that, if administered in sufficient quantities, and for a sufficiently long period of time, it is capable, in the great majority of cases, of arresting the disease, of diminishing the size of the joints, and of permitting increased movements. It also relieves pain markedly. It is useful in both the sub-acute and chronic forms of rheumatoid arthritis. The guaiacol probably acts by arresting further infection from the intestinal tract, and after absorption, by combining with the bacterial toxins, and assisting in their elimination. The iodide of potassium probably acts by promoting absorption of the hypertrophied fibrous tissues.

The most convenient form of administering the guaiacol is the carbonate in cachets. This salt is a white powder, which is free from the disagreeable odour, taste, and irritating effects on the stomach of guaiacol itself. In the intestines, it is slowly split up into guaiacol and carbonic acid gas. At first, from five to ten grains of the carbonate of guaiacol should be given three times a day, and the dose should be increased by one to two grains each week until from 15 to 20 grains are being taken in each dose. It is essential that this treatment should be continued for at least twelve months. The beneficial effects of the guaiacol are very much increased by administering at the same time a mixture containing potassium iodide ; the depressing effect of the iodide should be counteracted by its

combination with tonics, of which, perhaps, *nux vomica* and the compound glycero-phosphate syrup are the most useful. For the preservation of the latter, and to render the mixture palatable, spirit of chloroform and peppermint water may be employed. As regards the dosage of the iodide, my experience is that patients usually tolerate full doses from the beginning, and are much less liable to develop the distressing symptoms of "iodism" than if they are initially put on small doses. My usual practice now is to start them at once on 10-grain doses of the potassium iodide three times a day, and to continue this amount if it does not disagree.

The treatment that I have just detailed is, in my experience, incomparably superior to the prolonged treatment for two, three, or more years of such cases with small doses of arsenic and iron, a method of treatment which still has many supporters.

After the treatment with guaiacol carbonate and potassium iodide of a very large number of cases of rheumatoid arthritis, I am convinced that it is capable, in the great majority of cases, of arresting the disease, and so of preventing the frightful suffering connected with movements of the affected joints, a condition which is so common in cases of unrelieved rheumatoid arthritis. If the treatment is commenced in the comparatively early stages of the disease, then recovery with very little deformity may result (see Case 1), but even if after arrest of the disease much deformity results, very considerable mobility of the joints may be promoted by baths, superheated air, massage, and passive movements. It is frequently remarkable to find after such treatment what an amount of mobility and capacity for usefulness has been restored to joints which have been left in a severely deformed but quiescent condition.

The treatment that has just been described is especially intended for the chronic and sub-acute forms of rheumatoid arthritis, but for the treatment of the acute form of the disease during the pyrexial period, quinine is far and away the best drug.

OTHER TREATMENT.

The thermal treatment of the affected joints, either by means of baths, superheated air, or electric light baths, is most

beneficial. Douche massage is the most effective form of treatment with hot water, and perhaps next to that rank peat baths and brine baths. Electric light baths, in which the affected joints are bathed in the heat and light rays reflected from a number of incandescent electric lamps, are also beneficial in many cases.

Properly regulated movements and properly applied massage are of great use in overcoming the stiffening and fixation of the joints, and the muscular wasting in their vicinity. Massage increases the volume of blood circulating through the joint tissues, by which their nutrition is improved. It also exercises a stimulant effect on the trophic nerves, and tends to reduce any muscular spasm and to relieve pain. The absorption of recently formed adhesions is also probably promoted by massage. Massage, in addition to its local influence upon the affected joints and their proximate muscles, also improves the general circulation and the general nutrition of the body. General massage should, therefore, be lightly applied at first, little or no attention being paid to massage of the affected joints for the first few days. The form of manipulation which may be applied to the joints with the best results is *massage à friction*, which consists of the application of quick frictions or rubbings to the surfaces of the joints. In addition, gentle kneading and squeezing of the parts, particularly of the tendons and fibrous surroundings, should be effected. The effects of such manipulations are generally evidenced by the rapid absorption of exudative products in and around the joints. Active and passive movements of the affected joints should also be employed.

Counter irritation of the spine, in the form of linear blisters on both sides of the vertebral column, is of undoubted use in relieving the neuralgic pains, so frequently associated with the disease, especially in the earlier stages. The blisters should be applied to the cervical, dorsal, or lumbar region, according to the distribution of the pain.

If possible, a patient suffering from rheumatoid arthritis should not winter in this country. A dry warm atmosphere is required, which can be best obtained in Egypt and Algeria.

Appended are a few cases illustrating the effect of the treatment described in this paper.

Case 1.—Male. age 57. This patient was first seen by me five months after the commencement of the arthritis. It started in the left knee, and three weeks later the hands and finger joints were involved, and the disease then rapidly spread to the other knee, the feet, elbows, cervical vertebral, and temporo-maxillary joints. The disease had originally been diagnosed and treated as gout, and in consequence it had rapidly increased, and had assumed a very severe type, with considerable swellings of the affected joints, attended by great pain on movement. He had been for four and a half months on a very spare diet, on the assumption that he was suffering from gout. As soon as I saw him, the diet was changed to a full and generous one, and he was placed on treatment with guaiacol carbonate and iodide of potassium, which was continued for sixteen months, with an interruption of one month owing to an attack of influenza. During the course of treatment he had twelve electric light baths, and a month's course of douche massage at Buxton. After four months of treatment the joints began to improve, and from thence onwards the improvement was very rapid and marked. At the end of the sixteen months the joints had almost resumed their normal appearance, were quite mobile and free from pain. He then resumed his usual active life, and is now able to shoot, hunt, and play golf. At the end of three years he is quite well, and may be considered cured.

Case 2.—Male, age 61. This was a very severe case of rheumatoid arthritis, which began in an acute form and rapidly crippled the patient so that he had to be confined to bed. It started in the carpo-metacarpal joint of the right thumb, and rapidly involved all the thumb and finger joints of both hands, the wrists, shoulders, knees, and cervical vertebral joints. For three weeks during the acute stage he was placed on quinine and aspirin, which quickly relieved the pain, and at the end of that time the guaiacol carbonate and iodide of potassium treatment was commenced. A month later he was able to drive out and to take short walks. During the next four months, no considerable progress was made, but after that time the joints rapidly improved. He was kept on the treatment for fourteen months, and during that time had daily massage for about four months. Six months have now elapsed since he left off treat-

ment. The joints, though still somewhat enlarged, are mobile and quite free from pain, he is able to walk three or four miles at a time, and has resumed the direction of an extensive business.

Case 3.—Female, age 43. This was a case of rheumatoid arthritis of only a moderate degree of severity, but which was fortunately seen in the early stages of the disease. The finger joints, wrists, elbows, shoulders, knees, and temporo-maxillary joints were involved. There was considerable pain on movement, and the patient had been obliged to give up riding and walking to any extent. She was at once placed on the guaiacol carbonate and iodide of potassium treatment, and was kept on it for twelve months. After four months of treatment very rapid improvement of the joints set in. At the end of treatment no perceptible deformity of any of the joints remained, and they were quite mobile and free from pain. No other treatment was employed. She has now been for fifteen months in good health, and is able to walk, ride and lead an active life.

Case 4.—Female, age 24. This was a case of rheumatoid arthritis supervening in joints which had been previously affected by rheumatism. At 17 years of age the patient had a subacute attack of rheumatism, which lasted for three weeks, and, for the next seven years, she suffered from occasional attacks of articular rheumatism. When I saw her she had very definite rheumatoid arthritis affecting the finger and thumb joints, wrists, shoulders, knees, cervical vertebral, and temporo-maxillary joints. There was swelling and creaking of the affected joints, but no grating. She was able to walk a little, but had been obliged for some weeks to give up active exercise. She was placed for twelve months on the guaiacol carbonate and iodide of potassium treatment. No other treatment was used. At the end of three months the joints began to improve, and, by the time the treatment was discontinued, they had resumed their normal appearance and mobility. She is now able to lead an ordinary life, and has remained quite free from the rheumatoid arthritis for two years, although she has occasional slight relapses of her former rheumatism, which, however, quickly yield to treatment with aspirin.

Case 5.—Female, age 25. This was a case in which considerable destructive processes had occurred in the joints with

the production of many deformities. At 20 years of age she was attacked with severe rheumatoid arthritis involving all the finger and thumb joints, wrists, elbows, shoulders, knees, hips, cervical vertebral, and temporo-maxillary joints. She was treated for three years with arsenic and iron, but the joints gradually got worse. When I first saw her, at the age of 25 years, there was considerable deformity and grating in many of the joints, and the fingers were bent in various directions. All the joints were very painful, and she could only walk with difficulty. Her weight was only 4 stone, 12 pounds. She was placed for twelve months on the guaiacol carbonate and iodide of potassium treatment, and a generous dietary was ordered. At the end of that time the walking was very much improved, there was very little pain in the joints, and she was able to play the piano, on account of the absence of pain from the finger joints. The deformities of the joints and the grating remained the same. For two years she continued in this quiescent condition, and at the end of that time she had a slight relapse of the rheumatoid arthritis. She was at once placed for eight months on the guaiacol carbonate and iodide of potassium treatment. She has now been for nearly a year free from pain, and, although the deformities naturally remain the same as before, she is able to take a fair amount of exercise, and to generally enjoy life. Her weight has increased to 7 stone, 4 pounds. This case illustrates the improvement that may be effected even in long standing cases of very severe rheumatoid arthritis.



